

U.S. Application No.: 10/623,949
AMENDMENT A

Attorney Docket: 3827.116

IN THE SPECIFICATION

Please amend Paragraphs [00011], [00013], [00014] and [00015] of the application as filed as follows:

[00011] The tool head shown in the figure is designed for finish- processing of valve seat rings and tappet guide bores in cylinder heads for internal combustion engines. The tool head 10 is comprised essentially of a base body 12, a tool shank 14 projecting axially beyond the base body 12 and couplable with a not shown, motor driveable, rotating machine spindle of a machine tool, three short clamp holders 16, 16', 16'' provided spaced apart from each other about the circumference of the base body 12, which respectively exhibit one insert receptacle 18, 18', 18'' for receiving an indexable cutting insert 20, 20', 20'' and having a centrally located reamer 22 projecting beyond the surface. The reamer 22 is designed for processing a ~~tappet tapped~~ guide bore 24 indicated in Fig. 3a, b and c with a dash-and-dot line for a cylinder head 26 of which a segment is indicated with diagonal line shading. For face milling the valve seat ring 28 of the cylinder head 26 there is used the indexable cutting insert 20 provided in blade receptacle 18 of the short clamp holder 16. The two further indexable cutting inserts 20' and 20'' are for production of the inlet protecting bevel 30 and the outlet protecting bevel 32 bordering the valve seat 28. The reaming of the tappet guide bore 24 and the fine machining of the valve seat ring 28 and the protective bevels 30, 32 occurs for reasons of centering precision in the one and the same machining step of the workpiece 10. Accordingly, the indexable cutting inserts 20, 20' 20'' exhibit various adjustment angles in the associated blade receptacles 18, 18' 18'' on their active blade edges 34 in conformance to the individual angles to be machined.

[00013] A further feature of the invention is comprised therein, that the active main cutting edge or blade edge 34 in the shown embodiment is subdivided into three non-overlapping segments 36, 36', 36'', of which respectively one is associated with an appropriate blade

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receptacle 18, 18', 18" of one of the short clamp holders 16, 16', 16" (see Fig. 4a, b and c). Of these, the center cutting segment 36 of the indexable cutting insert 20 located in blade receptacle 18 is for production of the valve seat ring 28 (Fig. 4a). It exhibits the smallest adjustment angle α of the three blades of approximately 22°. The cutting or blade segment 36' in the indexable cutting insert 20' ~~22'~~ is associated with blade receptacle 18' and is exhibits an adjustment angle α' of 45° for producing the inlet bevel (Fig. 3b, 4b). The cutting or blade segment 36" on the indexable cutting insert 20" in blade receptacle 18" exhibits an adjustment angle α'' of 60° for producing the outlet bevel (Fig. 3c, 4c).

[00014] By the use of the same type of indexable cutting insert the indexable cutting inserts can in the case of wear also be exchanged between the short clamp holders 16, 16', 16", so that all three blade segments 36, 36', 36" come into employment as the respective main cutting blade or edge ~~34~~ 45. Thereby the cutting blade costs attributable to wear are reduced to one third.

[00015] In Fig. 5a and b top views of two typical indexable cutting inserts 20 ~~20^{III}~~, ~~20^{IV}~~ with triangular and pentagonal circumference are shown, of which the main cutting edges are subdivided into three or, as the case may be, two cutting blade segments, indicated with reference numbers 3, 4 and 6. The ~~three~~ ~~there~~ imprinted numbers indicate for example that the active main edge in the associated blade receptacle exhibits a defined adjustment angle for example 30°, 45° or 60°. The imprint upon the cutting blade simplifies manipulation during resetting. In particular, it can be seen with a single glance which of the characterized cutting edges is already worn and which is not. Thereby inadvertent adjustments can be avoided.

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